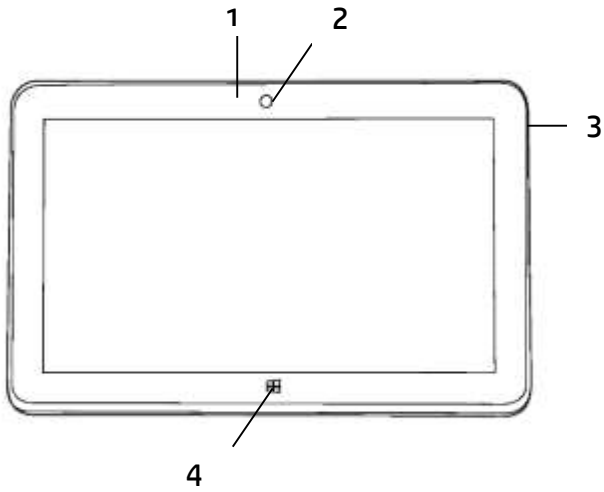
Overview

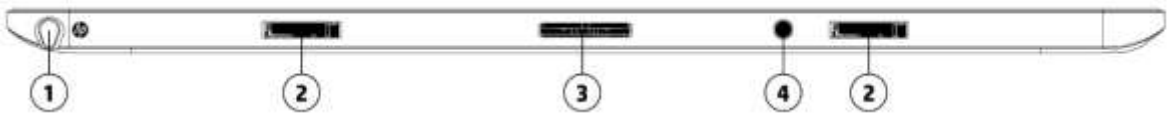
HP Elite x2 1011 G1



Tablet

1. Webcam LED
2. Webcam
3. Mic
4. Home button

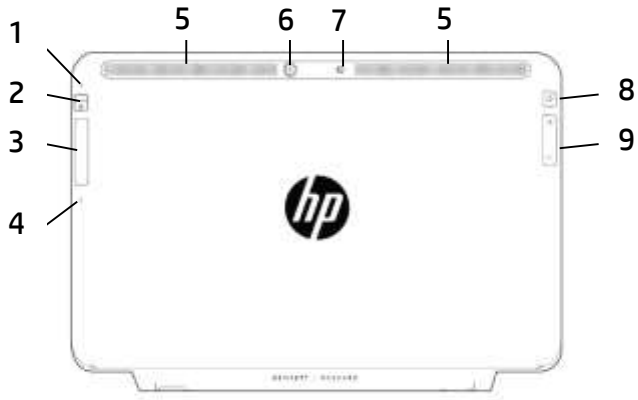
Overview



Tablet Bottom

1. Pen holder (select models only)
2. Alignment post connectors
3. Docking connector to power keyboard
4. Combo audio jack

Overview

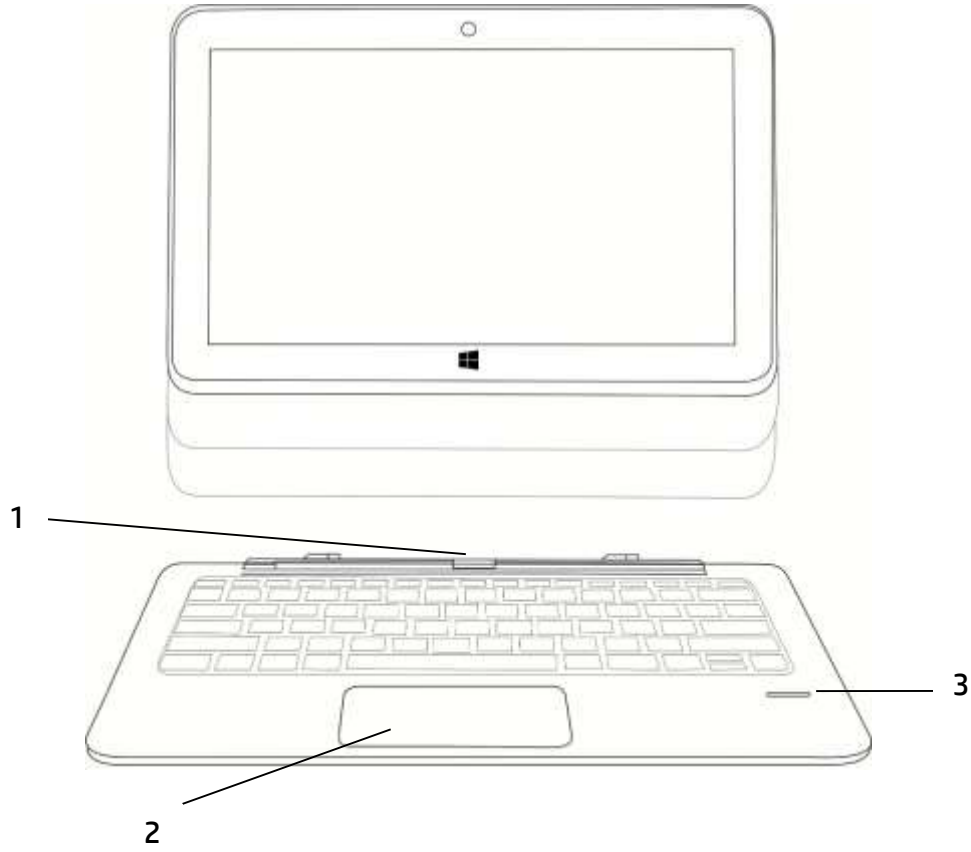


Back

1. Mic hole
2. Power button
3. SIM/ SD Card
4. SIM/ SD Card eject hole
9. Volume button

5. Vents
6. Camera
7. Camera flash
8. Rotation lock button

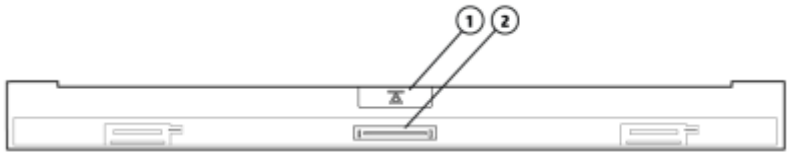
Overview



Tablet and Power Keyboard

1. Docking connector to tablet
2. Force Pad™
3. Fingerprint reader

Overview



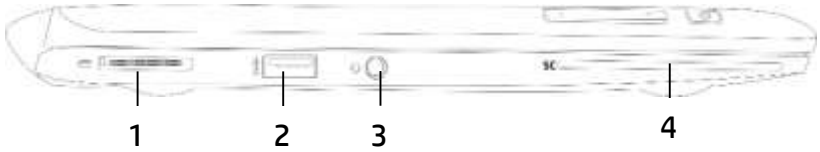
Keyboard Bottom

1. Release button
2. Docking connector to tablet

Overview

Tablet and Power Keyboard side view (right)

1. USB charging (powered) port
2. Display port
3. 4.5 mm power connector



Tablet and Power Keyboard side view (left)

1. Docking connector for Elitepad dongle support
2. USB port
3. Stereo headphone-out/mic-in combo jack
4. Smart card reader

Features

At A Glance

- Designed for excellent mobility this stylish and thin 2-in-1 design is built to the standards of Elite durability
- Windows 10 versions, Windows 8.1 versions, Windows 7 versions, or FreeDOS
- 5th Generation Intel® Core™ M processors
- 11.6" diagonal LED-backlit HD BV UWVA eDP 1.2 Ultra-slim (1366 x 768) or 11.6" diagonal LED-backlit FHD BV UWVA eDP 1.3 Ultra-slim (1920 x 1080) Touch Screens
- Solid State Drives up to 512 GB
- Starting weight at 0.78 kg/ 1.71 lb for Tablet, 0.78 kg/ 1.71 lb for Power keyboard and 0.53 kg/ 1.18 lb for Travel keyboard
- Height starting 1.07 cm / 0.42 in thin for Tablet and 2.08 cm / 0.82 in for Tablet and Power keyboard
- DTS Studio Sound™; Dual microphone array with HP Advanced Noise Reduction Software
- Front and Back facing camera and webcam
- Long Life Polymer battery on Tablet and Power keyboard (Select model only)
- Supports a broad range of wireless options, for connectivity on the go
- Create more and work in comfort on the spill resistant, backlit power keyboard that features an industry first reflex hinge design to provide greater stability for your touch and pen* experience
- Protect your device and data using the latest HP security technology solutions: HP Sure Start, HP BIOSphere and HP Client Security. Further optimize system security using certified TPM and optional Self-Encrypting Drive (SED) built-in the tablet and the integrated smart card reader and fingerprint reader on the power keyboard.
- Standard commercial 1 year limited warranty with upgrade available with optional warranty extension options and HP Care Packs.
- Electronic Flight Bag (EFB) certified

*The Wacom Pen is available as a configurable option at the time of order and available on models ordered with a digitizer screen. Models without a built-in digitizer are incompatible with the Pen and cannot be added as aftermarket option.

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Features

PRODUCT NAME

HP Elite x2 1011 G1

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64* Windows 10 Home 64* Windows 8.1 Pro 64* Windows 8.1 64* Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)*** Windows 7 Professional 64 (available through downgrade rights form Windows 8.1 Pro)** Windows 7 Professional 64* FreeDOS 2.0
Web-only Support	Windows 10 Pro 64* Windows 10 Home 64* Windows 8.1 Pro 64* Windows 8.1 64* Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)*** Windows 7 Professional 64 (available through downgrade rights form Windows 8.1 Pro)** Windows 7 Professional 64* Windows 7 Professional 32* Windows 10 Enterprise 64* Windows 8.1 Enterprise 64* Windows 8 Pro 64* Windows 8 64* Windows 7 Enterprise 64* Windows 7 Enterprise 32*

* Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.microsoft.com

** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

*** This system is preinstalled with Windows 7 Professional software and also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

PROCESSOR*

Intel® Core™ M-5Y71 with Intel HD Graphics 5300 (1.2 GHz, up to 2.9 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores, vPro Support)
Intel® Core™ M-5Y51 with Intel HD Graphics 5300 (1.1 GHz, up to 2.6 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores)
Intel® Core™ M-5Y10c with Intel HD Graphics 5300 (800 MHz, up to 2 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores)

Features

* Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing system required. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
** Intel® Turbo Boost technology requires a PC with a processor with Intel Turbo Boost capability. Intel Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel.com/technology/turboboost for more information.

CHIPSET

Integrated with processor

GRAPHICS

Intel® HD Graphics 5300

DISPLAY

Internal
Touch Screen
11.6" diagonal LED-backlit HD* BV UWVA eDP 1.2 Ultra-slim (1366 x 768) Touch*
11.6" diagonal LED-backlit FHD* BV UWVA eDP 1.3 Ultra-slim (1920 x 1080) Touch*

External
Up to 3840x2160@60hz for a single display, lower with additional displays connected (DisplayPort), HDMI from the side adapter is limited to 1920 x 1080@60Hz
24-bit + 8 bit alpha channel (standard)
Up to 30-bit per pixel color depth (Wide Color Gamut)

* HD content required to view HD images. * Touch panel has chemically-strengthened Corning® Gorilla® Glass 3 top cover
NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

STORAGE AND DRIVES

Internal Storage*
Supports M.2 SSD SS 2280
128 GB SATA III Solid State Drive
180 GB SATA III Solid State Drive
180 GB SATA III SED OPAL2 Solid State Drive
256 GB SATA III Solid State Drive
256 GB SATA III SED OPAL2 Solid State Drive
512 GB SATA III Solid State Drive

* For SSD's, GB=1 billion bytes. TB=1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and up to 30 GB (for Windows 8 and 10) of system disk is reserved for system recovery software.

MEMORY

LPDDR3-1600 (Transfer rates up to 1600 MT/s)
Supports Dual Channel Memory
Soldered Down

Standard
4 GB Total System Memory

Features

8 GB Total System Memory

Maximum
Up to 8 GB

NETWORKING/COMMUNICATIONS

Wireless
Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a standard, factory configurable feature only. Integrated Bluetooth is also available (factory configurable only) and is supported via combo card.

Wireless WAN (WWAN)*

HP hs3110 HSPA+ Mobile Broadband
HP lt4112 LTE/HSPA+ Qualcomm® Gobi™ 4G Mobile Broadband*
HP lt4211 LTE/EV-DO/HSPA+ Qualcomm® Gobi™ 4G Mobile Broadband*
HP lt4225 LTE/EV-DO Qualcomm® Gobi™ 4G Module*
HP lt4226 LTE/HSPA+ Qualcomm® Gobi™ 4G Module*

Wireless LAN (WLAN)**
Intel® Tri Band Wireless-AC 17265 802.11a/b/g/n/ac (2x2) and Bluetooth® 4.0 + WiGig Combo***
Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AN 7265 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo

* WWAN is an optional feature and requires factory configuration. WWAN connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions
**Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited.
***The WiGig-compatible notebook or tablet must be positioned within 1.2 m (4 ft) and without obstruction in the line of sight of the wireless dock. HP Advanced Wireless Docking is compatible with the HP Elite x2 1011 G1 with an optional installed Intel Tri Band Wireless AC with WiGig Combo card available at the time of purchase.

AUDIO/MULTIMEDIA

Audio
DTS Studio Sound™
Dual speakers (front facing)
Dual microphone array with echo cancellation, noise suppression
Headphone line-out and microphone-in (combo)
HP Advanced Noise Reduction Software

Camera – Front
Integrated 2 MP (1080p)

- 1080p format for video
- 2 MP for still capture
- Supports videoconferencing** and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1920x1080 resolution (1080p) and up to 30 fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing**

Features

- Improved low light sensitivity
- Improved dynamic range

Camera – Back
Integrated 5 MP (1080p)

- 1080p format for video
- 5 MP for still capture
- Supports videoconferencing* and still image capture
- High quality auto focus lens
- Video capture at various resolutions up to 1920x1080 resolution (1080p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing**
- Improved low light sensitivity
- Improved dynamic range

* Internet access required.

KEYBOARDS/ FUNCTION KEYS/ForcePad™

Optional Power Keyboard*
Spill-resistant with drain
Backlit
Dura Keys

Function Keys
F1 - Blank
F2 - ForcePad™ (on/off led)
F3 - Sleep
F4 - Display Switching
F5 - Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Brightness Down
F10 - Brightness Up
F11 - Backlight Toggle
F12 - Wireless On/Off

ForcePad™
Glass with chemical etched surface
Supports 2-way scroll
Taps enabled as default
Gestures enabled by default - 2 Finger Scrolling, 2 Finger Zoom (Pinch)

Optional Power Keyboard*

Dimensions	11.73 x 8.05 x 0.38 inch (29.8 x 20.46 x 0.97 cm)
Weight	1.71 lbs (780 g)
Kit contents	HP Elite x2 1011 Power Keyboard and documentation
Key Features	- Power keyboard base - Forcepad (87.5mm x 49.5mm) with image sensor, multi-touch gestures enabled

Features

- Smart card, 1x USB (3.0), 1x USB Charging (3.0), DP, Elitepad docking connector (dongle support only), Headphone/Microphone Combo, 4.5mm Multi-Pin AC port
- Full size 81/82-key island-style backlit keyboard with full row of function keys and LED indicators

*Sold separately or as an optional feature

Help protect your HP Elite x2 1011 G1 Tablet screen and work smarter on the go with a full-featured optional* HP Elite x2 1011 G1 Travel Keyboard.

Optional HP Elite x2 1011 G1 Travel Keyboard*

Dimensions	11.6 x 8.26x 0.24 inch (29.56 x 21.0 x 0.6 cm)
Weight	1.18 lbs (530 g)
Kit contents	HP Elite x2 1011 G1 Travel Keyboard and documentation
Key Features	- Thin keyboard folio with retaining flap - ClickPad (87 x 49 mm) with image sensor, multi-touch gestures enabled, on/off function and LED indicator - Foldable kickstand; 130° viewing angle - Docking connector to tablet - USB 3.0 port - Combo audio jack, DC-in (4.5mm) - Full size 81/82-key island-style backlit keyboard with full row of function keys and LED indicators *Sold separately or as an optional feature

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

BIOS
HP BIOSphere[1]
HP Sure Start
HP DriveLock | HP Automatic DriveLock
HP BIOS Protection[2]
HP Disk Sanitizer[3]
HP SpareKey[4]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Pre-Boot Security
Secure Erase[5]
Hybrid Boot (Windows 8.1 only)
Measured Boot (Windows 8.1 only)
Secure Boot (Windows 8.1 only)
Absolute Persistence Module[6]

MultiMedia
Cyberlink Power2Go
Cyberlink Power DVD
Cyberlink YouCam BE (Windows 7 only)

Communication

Features

HP GPS and Location (Windows 7 only)[7]
HP Connection Manager with support for HP Mobile Connect (Windows 7 only)[8]
HP Mobile Connect (Windows 8.1 only)
HP Wireless Hotspot (Windows 8.1 only)[9]
Intel WiDi Software[10]
HP Roaming Alert (Windows 8.1 only)

HP Value Add Software
HP 3D DriveGuard
HP ePrint Driver (HP Exclusive)[11]
HP Hotkey
HP PageLift
HP Support Assistant
HP Recovery Manager (Windows 7 only)
HP Recovery Disc Creator (Windows 7 only)

3rd Party
Box 50 GB Offer[19]
Box Application (Windows 8.1 only)
Foxit PhantomPDF Express for HP[20]
Netflix Application (Window 8.1only)

Microsoft Products
Buy Office
Bing Search
Skype[12]

Manageability
HP Driver Packs [13]
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)[13]
HP BIOS Config Utility (BCU)[13]
HP Client Catalog[13]
HP CIK for Microsoft SCCM[13]
LANDESK Management[14]
HP Touchpoint Manager[22]

For more information on HP Client Management Solutions refer to: http://www.hp.com/go/clientmanagement.

Client Security Software
HP Device Access Manager
HP Drive Encryption [15]
HP File Sanitizer [16]
HP Security Manager
HP SpareKey[17]
Microsoft Security Essentials (Windows 7 only)[18]
Microsoft Defender (Windows 8.1 only) [18]

Standard
TPM 1.2/2.0[21]
HP Fingerprint Reader (on the power keyboard for selected models)
Integrated Smart Card Reader (on the power keyboard for selected models)
Pre-boot Authentication

For more information on HP Client Security Software Suite, refer to http://www.hp.com/go/clientsecurity.

Features

1. HP BIOSphere features may vary depending on the PC platform & configuration.
2. HP BIOS Protection requires a HPTools partition for automatic recovery.
3. For the use cases outlined in the DOD 5220.22-M Supplement. Does not support solid state drives and requires Windows.
4. Requires initial user set up.
5. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
6. BIOS Absolute Persistence module is shipped turned off, and will be activated when customers purchase and activate a subscription. Service may be limited. Check with Absolute for availability outside the U.S. The optional subscription service of Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/computrace-agreement. If Data Delete is utilized, the Recovery Guarantee payment is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either create a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
7. GPS access requires an unobstructed path to multiple satellites. Performance may be affected if/when used inside of buildings, bridges or heavily congested metropolitan areas. Requires separately purchased GPS navigation software available from multiple GPS applications.
8. HP Mobile Connect service requires a compatible CDMA or HSPA mobile broadband module and prepaid service purchase. Find coverage and availability for your service area at hp.com/go/mobileconnect.
9. The HP Wireless Hotspot application requires an active internet connection and separately purchased data plan. While HP wireless hotspot is active, on-device applications will continue to work and will use the same data plan as the wireless hotspot. Wireless hotspot data usage may incur additional charges. Check with your service provider for plan details. Requires Windows 8.1 or HP Connection Manager for Windows 7.
10. Integrated Intel Wi-Di feature is available on select configurations only and requires separately purchased projector, TV or computer monitor with an integrated or external Wi-Di receiver. External Wi-Di receivers connect to the projector, TV or computer monitor via a standard HDMI cable, also sold separately.
11. Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/businessmobileprinting).
12. Skype is not offered in China.
13. HP Driver Packs, HP System Software Manager (SSM), HP BIOS Config Utility (BCU),HP Client Catalog and HP CIK for Microsoft SCCM are available as a free download from the HP manageability website: manageability site is www.hp.com/go/clientmanagement.
14. LANDesk is an optional feature sold separately. Managed devices must be connected to the management server. Location based functionality requires active LANdesk maintenance service. Wipe functionality performs a "Windows 8 Reset" and requires Windows 8. Lock performs a Windows "Lock Computer."
15. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive Encryption and prevents data access. Requires Windows.
16. Managed devices must be connected to the management server. Location based functionality requires active LANdesk maintenance service. Wipe functionality performs a "Windows 8 Reset" and requires Windows 8. Lock performs a Windows "Lock Computer."
17. Requires initial user set up. Business Desktops don't support SpareKey in the BIOS.
18. Opt in and internet connection required for updates.
19. Box offer requires Box registration. Offer available to new Box users only. Offer subject to change without notice. Box app requires Windows 8 or 8.1.
20. Read only.
21. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89
22. HP Touchpoint Manager supports Android™, iOS and Windows operating systems and PCs, notebooks, tablets and smartphones from various manufacturers. Not available in all countries see www.hp.com/touchpoint for availability information. Touchpoint Manager require purchase of a subscription. Out-of-band HP only Wipe, Lock, Unlock and reporting of BIOS boot error codes is planned to be available on select HP EliteBooks and tablets and requires Intel® vPro™ technology and functions in S3/Sleep, S4/Hibernate and S5/Soft Off power states.

Features

POWER

Power Supply

45W Smart RC AC Adapter (Not available for ASIA, INDIA, JPN2, JPN/ENG, PR)
45W 2-pin AC Adapter (Available for JPN2, JPN/ENG)
65W Smart EM AC Adapter (Available for ASIA, PRC, INDIA)
65W Slim AC Adapter(Available for AUST, JPN2, JPN/ENG includes DC Cable and tips)

Power dongle for 70 pin to 4.5mm power adapter (Tablet only)

Power cord is configurable; either 3.2 feet or 6 feet (1.0 or 1.8 meter)*
*2-wire plug - 1.0m available for JPN2, JPN/ENG, 3-wire plug - 1m and 3-wire plug – 1.8m not available for JPN2, JPN/ENG)

Tablet – Battery
2-cell Long Life Polymer (33 WHr)

Power keyboard - Battery
6-cell Long Life Polymer (21 WHr)

Battery Life*

1)Windows 7 battery time (Tablet only):
"Up to 12 hours, 45 minutes*"
* Windows 7 MM07 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

2) Windows 7 MM07 battery time (Tablet with Power Keyboard):
"Up to 20 hours with optional power keyboard*"
*Requires separately purchased power keyboard with battery. Windows 7 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

3) Windows 8 battery time (Tablet only):
"Up to 9 hours *"
* Windows 8 MM12 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

4) Windows 8 battery time (Tablet with Power Keyboard)
"Up to 14 hours and 15 minutes with optional power keyboard*"
*Requires separately purchased power keyboard with battery. Windows 8 MM12 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

System Standby Time
7 days*

* Standby life will vary depending on various factors including battery, Memory, CPU, EC and LAN chip. The maximum capacity of the battery will naturally decrease with time and usage.

Features

WEIGHTS & DIMENSIONS

Weight
Tablet only
Starting at 0.78 kg/ 1.71 lb

Tablet with Power Keyboard
Starting at 1.54kg/ 3.4 lb

Dimensions - (w x d x h)
Tablet
29.8 x 19.27 x 1.07 cm / 11.73 x 7.58 x 0.42 in

Tablet with Power Keyboard
29.8 x 20.61 x 2.08 cm/11.73 x 8.12 x 0.82 in

NOTE: Height varies depending upon where on the notebook the measurement is made.
Weight varies by configuration and components.

PORTS/SLOTS

Ports

Tablet
1 Docking connector to the tablet
1 Micro SIM
1 Headphone /microphone combo
Micro SD Media Reader Slot - Supports SD, SDHC, SDXC

Base
1 DisplayPort 1.2
1 USB 3.0 Charging Port
1 USB 3.0 Port
1 Smart Card Reader
1 Docking connector (ElitePad dongle support only)
1 Headphone/Microphone Combo

Travel keyboard

SERVICE AND SUPPORT

HP Services offers 3-year, 1-year and 90 day limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/cpc.

Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc.

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	19.5 V
	Average Operating Power	13.6W
	Max Operating Power	< 65 W
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	**Operating**	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	**Operating**	40 G, 2 ms, half-sine
	Non-operating	240 G, 2 ms, half-sine
Random Vibration	**Operating**	1.043 grms
	Non-operating	3.50 grms
Altitude (unpressurized)	**Operating**	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)

DISPLAYS

11.6” diagonal LED-backlit HD UWVA Ultraslim (1366 x 768)	**Outline Dimensions** (W x H x D)	27.05 x 15.95 x 0.25 cm	
	Active Area	25.6125 x 14.4 cm	
	Weight	170g (max)	
	Diagonal Size	11.6" in	
	Surface Treatment	Anti-glare	
	Contrast Ratio	800:1 (min)	
	Refresh Rate	60 Hz	
	Brightness	400 nit (typical)	
	Pixel Resolution	**Format**	1366 x 768 (HD)
		Configuration	RGB Stripe
	Interface	eDP 1.2	
	LCD Mode	IPS/FFS/VA	
	PPI	135 ppi	
	Viewing Angle	UWVA 85/85/85/85 (Left/Right/Down/Up)	
11.6” diagonal LED-backlit FHD UWVA Ultraslim (1920 x 1080)	**Outline Dimensions** (W x H x D)	27.05 x 15.95 x 0.25 cm	
	Active Area	25.632 x 14.418 cm	
	Weight	160g (max)	
	Diagonal Size	11.6 in	
	Surface Treatment	Anti-glare	
	Contrast Ratio	800:1 (min)	

Technical Specifications

Refresh Rate	60 Hz	
Brightness	400 nit (typical)	
Pixel Resolution	**Format**	**1920 x 1080** (FHD)
	Configuration	RGB Stripe
Interface	eDP 1.3	
LCD Mode	IPS/FFS/VA	
PPI	190 ppi	
Viewing Angle	UWVA 85/85/85/85 (Left/Right/Down/Up)	

STORAGE AND DRIVES

128 GB* M.2 Solid State Drive	**Drive Weight**	10 grams	
	Capacity	128 GB	
	Height	0.14 in (3.58 mm)	
	Width	0.87 in (22 mm)	
	Interface	SATA 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 520 MB/s	Up to 150 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM; DVESLP	
180 GB* M.2 Solid State Drive	**Drive Weight**	10 grams	
	Capacity	180 GB	
	Height	0.09 in (2.38 mm)	
	Width	0.87 in (22 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 540 MB/s	Up to 490 MB/s
	Logical Blocks	351,651,888	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM; DEVSLP	
180 GB* M.2 Solid State Opal 2 Drive	**Drive Weight**	10 grams	
	Capacity	180 GB	
	Height	0.09 in (2.38 mm)	
	Width	0.87 in (22 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 540 MB/s	Up to 490 MB/s
	Logical Blocks	351,651,888	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; TCG OPAL 2.x; ATA-8, SATA 3.0; DIPM; TRIM; DEVSLP	
256 GB* M.2 Solid State Drive	**Drive Weight**	10 grams	
	Capacity	256 GB	

Technical Specifications

	Height	0.14 in (3.58 mm)	
	Width	0.87 in (22 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 520 MB/s	Up to 300 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM; DEVSLP	
256 GB* M.2 Solid State Opal 2 Drive	**Drive Weight**	10 grams	
	Capacity	256 GB	
	Height	0.14 in (3.58 mm)	
	Width	0.87 in (22 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 520 MB/s	Up to 300 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; TCG OPAL 2.x; ATA-8, SATA 3.0; DIPM; TRIM; DEVSLP	
512 GB* M.2 Solid State Drive	**Drive Weight**	10 grams	
	Capacity	256 GB	
	Height	0.09 in (2.38 mm)	
	Width	0.87 in (22 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 450 MB/s	Up to 400 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM; DEVSLP	

SECURITY

HP Fingerprint Reader (On the Power Keyboard)	**Mobile Voltage Operation**	3.0V-3.6V
	Operating Temperature	14° – 167°F (-10° – 75°C)
	Current Consumption Image	36 mA peak
	Low Latency Wait for Finger	950 uA
	Capture Rate	30 cm/sec
	ESD Resistance	IEC 61000-4-2 4B (±15KV)

Technical Specifications

Detection Matrix	200*1 (plus another secondary line) 508 dpi 10 mm sensor area

NETWORKING/COMMUNICATIONS

WWAN

HP hs3110 HSPA+ Mobile Broadband Module

Technology/Operating bands	HSPA+: 2100 (Band1), 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 MHz (Band 5), 900 (Band 8) MHz
Wireless protocol standards	E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) HSPA: 7.2 Mbps (Download), 5.76 Mbps (Upload) WCDMA PS: 384 kbps (Download), 384 kbps (Upload) WCDMA CS: 64 kbps (Download), 64 kbps (Upload) E-GPRS: 296 kbps (Download), 236.8 kbps (Upload) GPRS: 107 kbps (Download), 85.6 kbps (Upload)
Maximum output power	HSPA+: 24 dBm E-GPRS 1800/1900: 26 dBm E-GPRS 850/900: 27 dBm GPRS 1800/1900: 30 dBm GPRS 850/900: 33 dBm
Maximum power consumption	2500 mA (peak); 600 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

HP lt4112 LTE/HSPA+ Mobile Broadband Module

Technology/Operating bands	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 800 MHz (Band 20, DD800) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz
Wireless protocol standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	LTE: 100 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)

Technical Specifications

Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26.5 dBM E-GPRS 900/850: 27.5 dBM GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

HP lt4211 LTE/EV-DO/HSPA+ Gobi 4G Module

Technology/Operating bands	LTE: 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 700 (Band 13 upper SMH), 700 (Band 17 lower SMH), 1900 MHz (Band 25, extended PCS) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz EV-DO: 800 (BC0), 1900 (BC1) MHz
Wireless protocol standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9 EVDO Release 0 and Release A
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	LTE: 100 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload) CDMA 1x: DL 153.6 kbps/UL 153.6 kbps EVDO Rev.A: DL 3.1 Mbps/UL 1.8 Mbps
Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26.5 dBM E-GPRS 900/850: 27.5 dBM GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm CDMA/EVDO: 24dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average) EVDO: 1000mA (peak); 720mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

Technical Specifications

HP lt2522 LTE/EV-DO Mobile Broadband Module (VZW)	
Technology/Operating bands	LTE: 700 (Band 13 upper SMH) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz EV-DO: 800 (BC0), 1900 (BC1) MHz
Wireless protocol standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9 EVDO Release 0 and Release A
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	LTE: 100 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload) CDMA 1x: DL 153.6 kbps/UL 153.6 kbps EVDO Rev.A: DL 3.1 Mbps/UL 1.8 Mbps
Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26.5 dBM E-GPRS 900/850: 27.5 dBM GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm CDMA/EVDO: 24dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average) EVDO: 1000mA (peak); 720mA (average)
Form Factor	MiniCard
Weight	TBD
Dimensions (Length x Width x Thickness)	56.05 x 30 x 5 mm

HP lt4226 LTE/HSPA+ Gobi 4G Module (Docomo)	
Technology/Operating bands	LTE: 2100 (Band 1), 800 (Band 19, Japan 800 upper), 1450 (Band 21) HSPA+: 2100 (Band 1), 800 (Band 6), 800 (Band 19) MHz
Wireless protocol standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	LTE: 100 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload)
Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm

Technical Specifications

Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

* Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors.
4G LTE not available on all products or in all countries.

Technical Specifications

WLAN			
Intel® Tri Band Wireless-AC 17265 802.11a/b/g/n/ac (2x2) and Bluetooth® 4.0 + WiGig Combo* **	**Form Factor**	Combo Module, M.2 3030-S3-A	
	Dimensions	30.00±0.15mm by 30.00±0.15mm by 2.38mm max.	
	Weight	4 grams	
	Operating Voltage	3.3 Volts	
	Power Consumption	TBD	
	Power Management	Win8.1 Connected Standby	Supports Win8.1 Connected Standby mode, and ensuing RTD3 (real time D3) flows
		CPPM Gen 1	Supports CPPM (Converged Platform Power Management) Gen1
		ACPIv3.0	Implements according to the ACPI v3.0 Specification
		ACPIv4.0	Implements according to the ACPI v4.0 Specification
		ACPIv5.0	Implements according to the ACPI v5.0 Specification
		Wake on WiGig	Able to trigger waking up the platform upon the following events: USB activity on the dock, while connected. Detection of a pre-paired WiGig dock. Disconnection.
	Thermal Management	Configurable TDP	Implements a mechanism which enables capping of the thermal dissipation of Device Module and R-FEM, Dock WiGig Module, R-FEM, independently, to a pre-configured limit per platform.
		Storing TDP limit	Module TDP limits are stored in a secured persistent memory in the platform (e.g., BIOS tables).
		Thermal throttling	Module implements a WiGig-autonomous Thermal throttling mechanism, to prevent the silicones junction temperature from reaching the critical shutdown threshold.
		Maintaining connectivity while throttling	Module maintains an active WiGig link while in thermal throttling.
		Thermal Critical Shutdown	Module implements a WiGig-autonomous thermal critical shutdown mechanism, to protect the Silicones from permanent thermal damage.
	Temperature	Ambient	≤ 35°C
		Operating	0° to +80°
	Humidity	Non-operating	50% to 90% RH non-condensing (at temperatures of 25°C to 35°C)
	Altitude	Operating Non-operating	
	LED Activity	Amber and White, Solid on Flashing and 'Breathing' indicate link status and Standby/Sleep status (see dock user manual for details)	

Technical Specifications

Intel® Dual Band Wireless-AC 7265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.0 Combo	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n • 2.402 – 2.482 GHz Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels. 802.11a • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)
	Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
	Network Architecture	Ad-hoc (Peer to Peer)
	Models	Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum

- 802.11n HT40(5GHz) : +12dBm minimum
- 802.11ac 80MHz(5GHz) : +11dBm minimum

Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 60 mW (WLAN unassociated) Radio disabled: 30 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -86dBm maximum 802.11a, 54Mbps : -72dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g Or Type 1630 : 2g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (–10° to 70° C) Non-operating –40° to 176° F (–40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric

Technical Specifications

Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.
Receiver Sensitivity	

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
π/4-DQPSK	-80 dBm	-70 dBm
8DPSK	-80 dBm	-70 dBm

Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Electrical Interface	Full support of Bluetooth Security Provisions
Bluetooth Software Supported	Microsoft Windows ACPI, and USB Bus Support
Security	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Power Management	All necessary regulatory approvals for supported countries, including:
Power Management	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Certifications	ETS 300 328, ETS 300 826
Bluetooth Profiles Supported	Low Voltage Directive IEC950 UL, CSA, and CE Mark Serial Port Profile (SPP)[1] Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN)[1,2] Generic Object Exchange Profile (GOEP)[1,2] Object Push Profile (OPP)[1,2] File Transfer Profile (FTP) Synchronization Profile (SYNC)
Certifications	Hard Copy Cable Replacement (HCRP)[1,2]
Bluetooth Profiles Supported	Personal Area Networking Profile (PAN)[1,2] Human Interface Device Profile (HID)[1,2] FAX Profile (FAX) Basic Imaging Profile (BIP)[2] Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

Intel® Dual Band Wireless-AN 7265 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n

	• 2.402 – 2.482 GHz Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels. 802.11a • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)
Antenna Structure	2 transmit; 2 receive (2x2)
Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)
Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM
Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between band Access Points
Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 60 mW (WLAN unassociated) Radio disabled: 30 mW

Technical Specifications

Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[4]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -86dBm maximum 802.11a, 54Mbps : -72dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g Or Type 1630 : 2g
Operating Voltage	3.3v +/- 9%
Temperature	Operating: 14° to 158° F (-10° to 70° C) Non-operating: -40° to 176° F (-40° to 80° C)
Humidity	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)
Altitude	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - Radio OFF; LED White - Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.

Receiver Sensitivity

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
π/4-DQPSK	-80 dBm	-70 dBm

Technical Specifications

8DPSK	-80 dBm	-70 dBm

Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported Link Topology	Microsoft Windows Bluetooth Software
Electrical Interface	Point to Point, Multipoint Pico Nets up to 7 slaves
Bluetooth Software Supported Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support
Power Management Certifications	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Security	All necessary regulatory approvals for supported countries, including:
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Bluetooth Profiles Supported	
Power Management Certifications	ETS 300 328, ETS 300 826
	Low Voltage Directive IEC950
	UL, CSA, and CE Mark
	Serial Port Profile (SPP)[1]
	Service Discovery Application Profile (SDAP)
	Dial-Up Networking (DUN)[1,2]
	Generic Object Exchange Profile (GOEP)[1,2]
	Object Push Profile (OPP)[1,2]
	File Transfer Profile (FTP)
	Synchronization Profile (SYNC)
Certifications	Hard Copy Cable Replacement (HCRP)[1,2]
Bluetooth Profiles Supported	Personal Area Networking Profile (PAN)[1,2]
	Human Interface Device Profile (HID)[1,2]
	FAX Profile (FAX)
	Basic Imaging Profile (BIP)[2]
	Headset Profile (HSP)
	Hands Free Profile (HFP)
	Advanced Audio Distribution Profile (A2DP)

AUDIO/MULTIMEDIA

Hardware	**Implementation**	B Realtek ALC3228 High Definition CODEC
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array
Audio Output Quality	**Frequency Response**	20 Hz - 20 kHz

Technical Specifications

	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz - 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit
Internal Stereo Speaker	**Power Rating**	1.5Watt
	Impedance	8 ohms

POWER

HP 45W Smart AC Adapter non-slim	**Dimensions** (H x W x D)	95.0 x 40.0 x 26.5mm	
	Input	90 to 265 VAC	
		Input Efficiency	88% min at 115 VAC / 89% min at 230VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC and maximum load
	Output	Output power	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8A, Over voltage protection- 29V max automatic shutdown
	Connector	**3 pin/non-grounded**, mates with 4.5mm barrel type Smart ID DC connector	
	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 121° F (-20° to 85° C)
		Altitude	0 to 16,405 ft (0 to 5,000 m)
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure rate of less than 0.1% annually within the first three years of operation.	
HP 45W Smart AC Adapter non-slim 2 prong	**Dimensions** (H x W x D)	95.0 x 40.0 x 26.5mm	
	Input	90 to 265 VAC	
		Input Efficiency	88% min at 115 VAC / 89% min at 230VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC and maximum load
	Output	Output power	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8A, Over voltage protection- 29V max automatic shutdown
	Connector	2 pin/non-grounded, mates with 4.5mm barrel type Smart ID DC connector	

Technical Specifications

	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 121° F (-20° to 85° C)
		Altitude	0 to 16,405 ft (0 to 5,000 m)
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure rate of less than 0.1% annually within the first three years of operation.	
HP 65W EM Smart AC Adapter	**Dimensions**	4.98 x 1.97 x 1.18 in (12.65 x 5.0 x 3.0 cm)	
	Weight	0.62 lb (290 g) max	
	Input	90 to 265 VAC	
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	**Output power**	65W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	
HP 65W Slim Smart AC Adapter	**Dimensions**	120.0 x 57.6 x 16.7 mm	
	Weight	250 g	
	Input	90 to 265 VAC	
		Input Efficiency	88% min at 115 VAC / 89% min at 230VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	**Output power**	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input

	Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
Connector	3 pin/grounded, mates with interchangeable cords	
Environmental Design	**Operating temperature**	32° to 104° F (0° to 40° C)
	Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
	Altitude	0 to 10,000 ft (0 to 3,048 m)
	Humidity	20% to 80%
	Storage Humidity	10% to 90%
EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	

HP 2-cell Polymer Battery (33 WHr)	**Cells/Type**	2-cell Polymer	
	Watt-hour capacity	33 WHr	32° to 113° F (0° to 45° C)
	Temperature	**Operating (Charging)**	14° to 140° F (-10° to 60° C)
		Operating (Discharging)	-4° to 140° F (-20° to 60° C)
		Non-operating	
	Warranty	3 year limited	32° to 113° F (0° to 45° C)
HP 6-cell Polymer Battery (21 WHr)	**Cells/Type**	6-cell Polymer	14° to 140° F (-10° to 60° C)
	Watt-hour capacity	21 WHr	-4° to 140° F (-20° to 60° C)
	Temperature	**Operating (Charging)**	
		Operating (Discharging)	
		Non-operating	
	Warranty	3 year limited	

ENVIRONMENTAL DATA

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT Silver registered in the United States. See http://www.epeat.net for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	7.04 W	6.9 W	6.96 W

Technical Specifications

Normal Operation (Long idle)	3.12 W	3.12 W	3.15 W
Sleep	0.33 W	0.43 W	0.33 W
Off	0.27 W	0.32 W	0.27 W

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	24 BTU/hr	24 BTU/hr	24 BTU/hr
Normal Operation (Long idle)	11 BTU/hr	11 BTU/hr	11 BTU/hr
Sleep	1 BTU/hr	1 BTU/hr	1 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd}, bels)	Sound Pressure (L_{pAm}, decibels)
Typically Configured – Idle	2.5	15
Fixed Disk – Random writes	2.5	15

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 3 USB ports
- 1 PC card slot (type I/II)
- 1 ExpressCard/54 slot
- 1 IEEE 1394 Port
- 2 SODIMM memory slots
- Optional expansion base docking station
- 1 multi-bay II storage port
- Interchangeable HDD

<edit list of features as required>

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:
Mercury greater the1ppm by weight

Technical Specifications

Cadmium greater than 20ppm by weight

Battery size: 2-cell high capacity Lithium-Ion battery (optional 6 cell battery)
Battery type: Battery pack
Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Silver level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0% post-consumer recycled plastic (by wt.)
- This product is 97.6% recycle-able when properly disposed of at end of life.

Packaging Materials

External:	PAPER/Corrugated	328.5 g
Internal:	PLASTIC/EPE - Expanded Polyethylene	16.4 g
	PLASTIC/Polyethylene low density	10.5 g

The plastic packaging material contains at least 50% recycled content.
The corrugated paper packaging materials contains at least 70% recycled content.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/qse.pdf):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances

- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html

Eco-label certifications
http://www8.hp.com/us/en/hp-information/environment/ecolabels.html

ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf
and
http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

COUNTRY OF ORIGIN

China

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part number
Carrying Cases	HP Business Slim Top Load (up to 14.1" x .75" thick)	H5M91AA
	HP Executive Leather Messenger (up to 14.0" x 1")	K0A31AA
	HP Slim Ultrabook Messenger (up to 15.6" x .88"/22/5mm)	F3W14AA
	HP Slim Ultrabook Top Load (up to 15.6" x .88"/22/5mm)	F3W15AA
	HP Slim Ultrabook Backpack (up to 15.6" x .88"/22/5mm)	F3W16AA
	HP Ultrabook Sleeve (up to 12.5"/31.8cm x 1"/25.4mm)	F7Z98AA
	HP Ultrabook Sleeve (up to 14.0/35.6cm x 1"/25.4mm)	F7Z99AA
Stands	HP Adjustable Dual Monitor Stand	AW664AA#xxx
	HP Display and Notebook Stand II	E8G00AA#xxx
	HP Advanced Wireless Dock	F7M97AA#xxx
Input Devices	HP Wireless Mobile Mouse	H2L63AA
	HP X4000b Bluetooth Mouse	H3T50AA#xxx
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP USB Travel Mouse	G1K28AA
	HP Stylish Wireless KB/Mouse	H4B79AA
Adapters	USB Graphics Adapter	NL571AA/AT
	HP DisplayPort to HDMI 1.4 Adapter	F3W43AA
	HP DisplayPort to DVI Adapter	F7W96AA
	HP DisplayPort to VGA Adapter	F7W97AA
	HP Wireless Display Adapter	J1V25AA#xxx
	HP ElitePad HDMI/VGA Adapter	H3N45AA
	HP ElitePad 4.5mm AC Adapter	K0V97AA
Keyboards	HP Elite x21011 G1 PowerKeyboard	L0U13AA#xxx
	HP Elite x21011 G1 Travel Keyboard	K6B54AA#xxx
Docking Station	HP Advanced Wireless Docking Station	F7M97AA
Cables	HP Elitepad Ethernet Cable	H3N49AA
	HP ElitePad Serial Cable	H3N50AA
Power Adapters	HP 45W Smart AC Adapter (4.5mm) (PL MP only)	H6Y88AA#xxx
	HP 65W Smart AC Adapter (4.5mm)	H6Y89AA#xxx
	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 65W Smart Travel AC Adapter	J0E43AA#xxx
Security	HP UltraSlim Keyed Cable Lock	H4D73AA
Storage	HP External USB Optical Drive	F2B56AA
Monitors	HP EliteDisplay E221c 21.5-in Webcam Monitor	D9E49AA
	HP EliteDisplay S231d 23-inch LED Backlit Monitor	F3J72AA
	HP EliteDisplay S240ml 23.8-in MHL Monitor	F4M47AA

Options and Accessories (sold separately and availability may vary by country)

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Summary of Changes

Date of change:	Version History:		Description of change:
February 19, 2015	V1 to V2	Updated	External display section and added Environmental information
March 6, 2015	V2 to V3	Updated	Memory speed
March 12, 2015	V3 to V4	Updated	Memory speed
April 14, 2015	V4 to V5	Added	Web supported Operating Systems
June 29, 2015	V5 to V6	Added	Windows 10 in overview in page 7, OS list on page 8, footnotes on pages 8,9
July 30, 2015	V6 to V7	Added	Electronic Flight Bag certified page 7